



MINERAL

Sector Bulletin

2020

[APRIL]

FOREIGN TRADE [P. 9]
OPINION [P. 24]

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A yellow Komatsu 980D-7 dump truck is the central focus, parked on a dirt road in a mining landscape. The truck's body is marked with '980D-7' and 'KOMATSU'. The background shows a vast, open mining site under a blue sky with scattered white clouds. The foreground features a large, textured rock formation. The entire image is framed by a geometric design of overlapping triangles in shades of purple, blue, and white.

MINING

PROSPERITY
FOR **DEVELOPMENT** AND
SOCIAL WELFARE

Cover photo: Francesco Ungaro on Unsplash
Back cover photo: Dominik Vanyi on Unsplash
(unsplash.com)

TO THE READER

This 3rd Bulletin comes at a time when society and the world economy are undergoing weighty changes due to the COVID-19 pandemic.

At the beginning of this year, the growth perspectives for the Brazilian mineral sector were very favorable, with investments estimated to increase by 17%, reaching 35.2 billion dollars from 2020 to 2024.

As a result of the crisis that stroke the country and the world, the World Bank currently estimates a reduction of the mineral sector growth in Brazil of around 4.5%. Despite such estimates, we are convinced in Brazil that we have to keep working very hard in order to ensure that the impact of the crisis in mining is as insignificant as possible. Bearing in mind that mining is an essential activity for society as a whole, and despite the projections, we are sure that mining will be an essential tool for economic recovery during and after the pandemic.

Have a pleasant reading.

Alexandre Vidigal de Oliveira

National Secretary of Geology,
Mining and Mineral
Transformation

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MINERAL Sector Bulletin

3rd ISSUE

SUMMARY

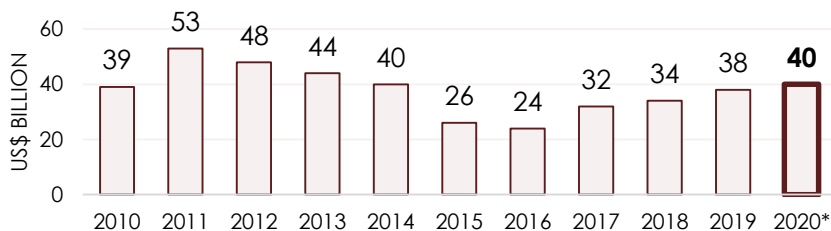
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BRAZIL, BRASILIA, APRIL 2020

ENGLISH VERSION

1 | Sector Overview

1.1 VALUE OF BRAZILIAN MINERAL PRODUCTION (PMB)¹



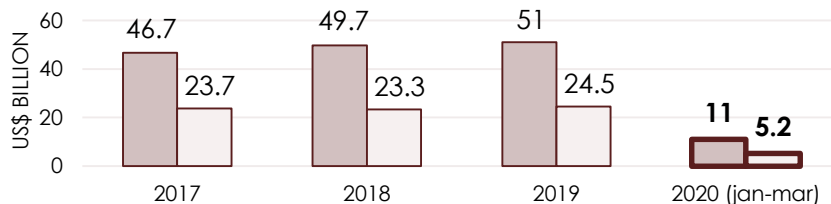
Source: Brazilian Mining Association (IBRAM, 2019)

*Estimated. Calculated on February 2020.

1.2 EXPORTS AND TRADE BALANCE OF THE MINERAL SECTOR

■ Export Value of the Mineral Sector (US\$ billion)

□ Mineral Trade Balance (US\$ billion)



Source: Economy Ministry (COMEX-STAT/ME, 2020) consolidated by DTTM/SGM

1.3 GDP PARTICIPATION (APPROACH)

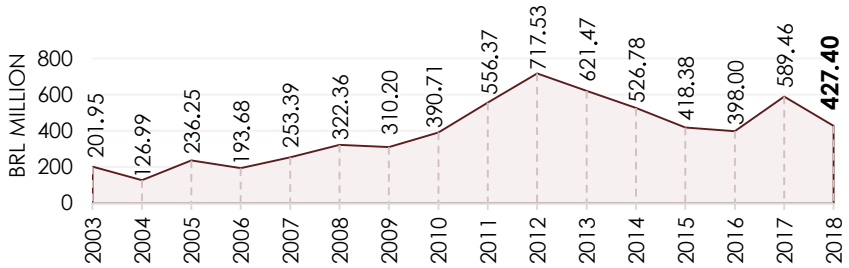
	2017	2018
Brazil GDP (BRL billion)	6,752	6,828
Mineral Extractive Industry GDP² (%) (excluding Oil and Gas)	0.66	0.64
Metallurgy GDP (%)	1.34	1.34
Transf. Non-Metallic GDP (%)	0.47	0.46
Mineral Sector GDP (%) (Extractive Ind.+ Met+ Non Met. Transf.)	2.47	2.44

Source: *Synopsis* (DTTM/SGM, 2019), Brazilian Institute of Geography and Statistics (IBGE)

¹ PMB (abbrev. in portuguese) is the sum of all mineral goods produced in the country calculated in billions of dollars, methodology of the Brazilian Mining Association (IBRAM).

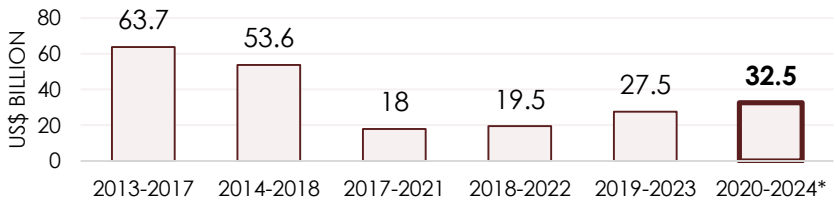
² GDP of Mineral Extractive Industries including Oil and Gas: 2017= 2.26; 2018= 2.26.

1.4 MINERAL EXPLORATION INVESTMENT STATEMENT (BRL MILLION)



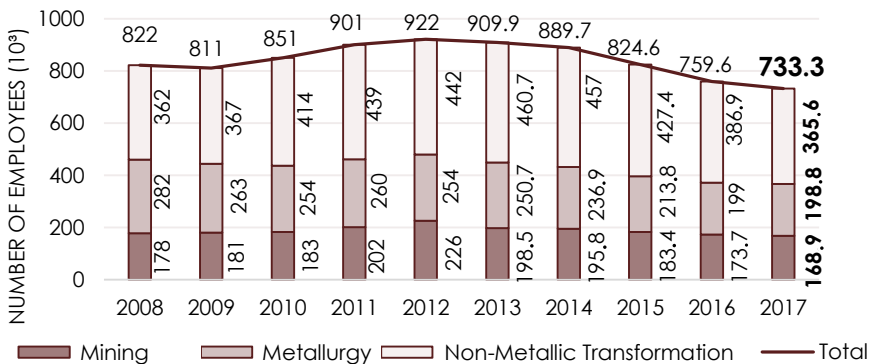
Source: National Mining Agency (DIPEM/ANM, 2019)

1.5 INVESTMENTS IN MINING PROJECTS (US\$ BILLION)



Source: Brazilian Mining Association (IBRAM, 2020)

1.6 MINERAL SECTOR DIRECT EMPLOYMENT



Source: DTTM/SGM (2019), Annual List of Social Information of Economy Ministry (RAIS/ME)

2 | Mineral Reserves

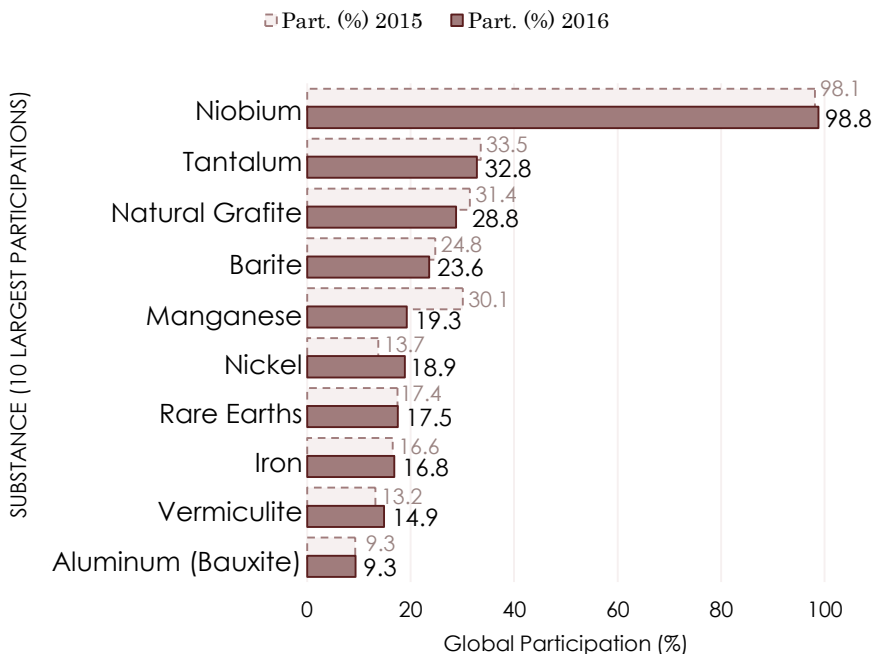
2.1 MAIN MINERAL RESERVES IN BRAZIL

Substance	Reserve (10 ³ t)	Global Participation (%)
Aluminum (Bauxite) ¹	2,600,000	9.3
Barite ²	81,570	23.6
Chromite ²	2,451	0.5
Cobalt ²	70	1.0
Copper ²	11,212	1.6
Gold ²	2.4	4.2
Graphite ¹ (natural)	72,000	28.8
Iron Ore ¹	28,603,000	16.8
Lead ²	74	0.1
Lithium ²	54	0.4
Magnesite ¹	391,000	4.6
Manganese ⁶	136,492	19.3
Mineral Coal ¹	3,799,000	0.4
Niobium ²	16,166	98.8
Nickel ²	15,991	18.9
Phosphate Rock ⁴	315,000	0.5
Platinum Gr. Metals ³	n.a.	n.a.
Potash ⁴	1,400	0.0
Rare Earths ²	21,000	17.5
Silver ²	3.8	0.7
Talc and Pyrophyllite ¹	45,163	n.a.
Tantalum ²	33.7	32.8
Tin ²	382.7	8.8
Titanium ⁵	6,181	0.8
Tungsten ²	28	0.9
Vanadium ²	119	0.6
Vermiculite ¹	7,000	14.9
Zinc ²	2,464	1.1
Zirconium ¹	2,319	3.1

Source: *Brazilian Mineral Summary* (National Mining Agency, ANM, 2017)

Notes: 1- Recoverable ore reserve; 2- Contained metal recoverable reserve; 3- Contained metal recoverable reserve of Pt+Pd; 4- Contained metal recoverable reserve in P₂O₅ or K₂O equivalent; 5- Contained metal recoverable reserve of ilmenite + rutile; 6 – Contained metal in the proven reserve; n.a. not available.

2.2 GLOBAL PARTICIPATION OF BRAZILIAN MINERAL RESERVES (2015 VERSUS 2016)



Source: *Brazilian Mineral Summary* (National Mining Agency, ANM, 2016 and 2017)

DID YOU KNOW? “

A Mineral Resource is a concentration of minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction, but which has not been submitted to a detailed economic evaluation yet.

A Mineral Reserve is the economically mineable part of the Mineral Resource duly demonstrated by technical and economic feasibility studies.

”

3 Mineral Production

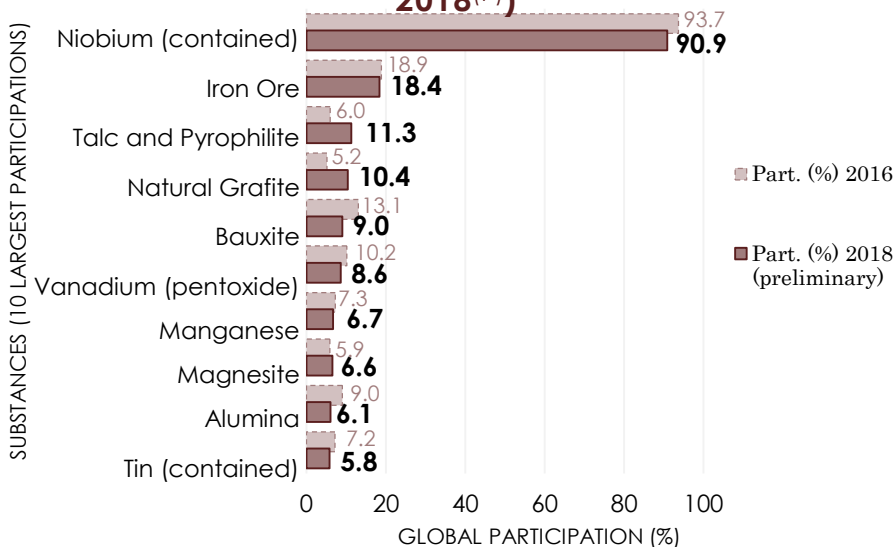
3.1 NATIONAL PRODUCTION^(B) OF MINERAL GOODS 2015 TO 2018 (10³ t)

Substance	2015	2016	2017	2018 ^(p)
Agricultural Limestone	29,433	32,469	37,600 ^(p)	43,000
Barite ¹	17.8	12.1	n.a.	n.a.
Bauxite	35,715	37,389	36,375	27,000
Chromite ³	526.7	426.3	542.9	n.a.
Copper ¹	350.9	338.9	384.5	381.0
Gold ⁶	0.083	0.094	0.080	0.081
Grafit ² _(natural)	81.8	61.7	95 ^(p)	96.8
Iron Ore	430,838	421,358	453,703	460,000
Kaolin	1,802	1,737	1,800 ^(p)	2,000
Lithium ⁴	0.31	0.44	0.2 ^(p)	0.60
Magnesite	1,621	1,652	1,800 ^(p)	1,900
Manganese ¹	1,243	1,200	1,343	1,200
Mineral Coal _(metallurgical)	150.9	52.9	n.a.	n.a.
Mineral Coal _(thermal)	6,748.6	6,009.8	3,878.3 ^(p)	4,449.9
Nickel ¹	182.9	134.6	68.8	80.0
Niobium ⁵	80.5	80.7	83.2	80.0
Phosphate Rock ²	6,100	5,850	5,345 ^(p)	5,098
Potash ⁷	304.0	316.4	306.2 ^(p)	201.2
Rare Earths _(monazite)	1.63	4.53	1.7 ^(p)	1.00
Sulfur	514.0	530.0	530 ^(p)	530.0
Talc and Pyrophyllite ⁸	642.6	657.0	850 ^(p)	850.0
Tantalum ²	0.27	0.13	0.11 ^(p)	0.10
Tin ¹ _(cassiterite)	20	15.2	17.1	18.0
Titanium ²	81.0	66.5	50.0	50.0
Vanadium _(V₂O₅ flakes)	5.81	7.97	5.21 ^(p)	6.30
Zinc ¹	157.0	158.2	156.5	n.a.

Source: *Mineral Summary* (National Mining Agency, ANM, 2017 and 2018), *Mineral Yearbook* (ANM, 2018); *Mineral Commodity Summaries* (USGS, 2018 and 2019); *Synopsis* (DTTM/SGM, 2019), *Non-Metallic Transformation Sector Yearbook* (DTTM/SGM, 2019).

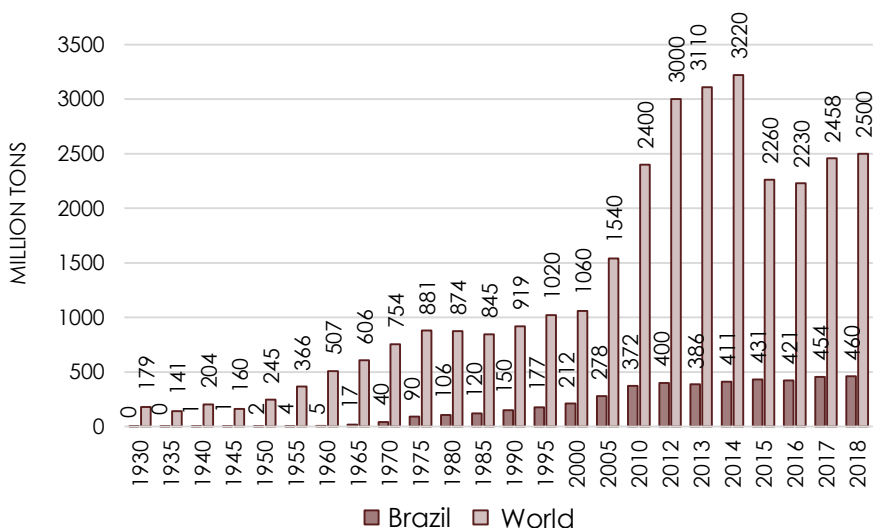
Note: (B) Beneficiated production; 1- Contained metal; 2- Concentrate; 3- Lump Ore + chromite concentrate; 4- Contained in lithium oxide; 5- Nb₂O₅ contained in concentrate; 6- Companies + small-scale mining; 7- K₂O equivalent; 8- Total; (p) preliminary; n.a. not available.

3.2 BRAZILIAN PARTICIPATION IN WORLD PRODUCTION OF MINERAL GOODS (2016 VERSUS 2018^(P))



Source: *Mineral Summary* (National Mining Agency, ANM, 2017), *Mineral Commodity Summaries* (USGS, 2019), *Synopsis* (DTTM/SGM, 2019). Note: (p) preliminary. Data subject to revision.

3.3 HISTORICAL NATIONAL AND WORLD PRODUCTION OF IRON ORE



Source: DTTM/SGM (2019), USGS, DNPM/ANM

3.4 NATIONAL METAL AND ALLOY PRODUCTION 2015 TO 2018 (10³ t)

Substance	2015	2016	2017 ^(p)	2018 ^(p)
Alumina	10,452	10,886	10,900	7,900
Aluminum (primary metal)	772.2	792.7	801.7	659.0
Copper (primary metal)	241.5	225.6	143.0	147.0
Iron-Nickel Alloy	71.5	156.0	210.0	62.2
Iron-Niobium Alloy (Nb contained)	52.9	44.4	58.7	n.a.
Pig Iron	32,110	29,587	32,100	32,500
Raw Steel	33,256	31,275	34,400	34,900
Silicon (metallic)	117.0	110.0	110.0	190.0
Zinc (primary metal)	270.7	284.5	262.4	258.5

Source: *Mineral Summary* (National Mining Agency, ANM, 2017), *Mineral Commodity Summaries* (USGS, 2018 and 2019), *Synopsis* (DTTM/SGM, 2016 to 2019), Parapanema company (2020).

Note: (p) preliminary; n.a. not available

3.5 NATIONAL PRODUCTION^(B) OF CONSTRUCTION MATERIALS 2015 A 2018 (10³ t)

Substance	2015	2016	2017 ^(p)	2018 ^(p)
Construction Sand	349,087	312,044	294,000	n.a.
Crushed Stone and Gravel	261,022	236,387	203,000	n.a.
Lime	n.a.	8,300	8,300	8,400
Cement	64,874	57,630	53,703	53,458
Dimension Stone	9,500	9,300	9,240	9,000

Source: *Mineral Summary* (National Mining Agency, ANM, 2017), ANEPAC, *Synopsis* (DTTM/SGM, 2016 to 2019) and *Non-Metallic Transformation Sector Yearbook* (DTTM/SGM, 2019).

Note: (B) Beneficiated production; (p) preliminary; n.a. not available

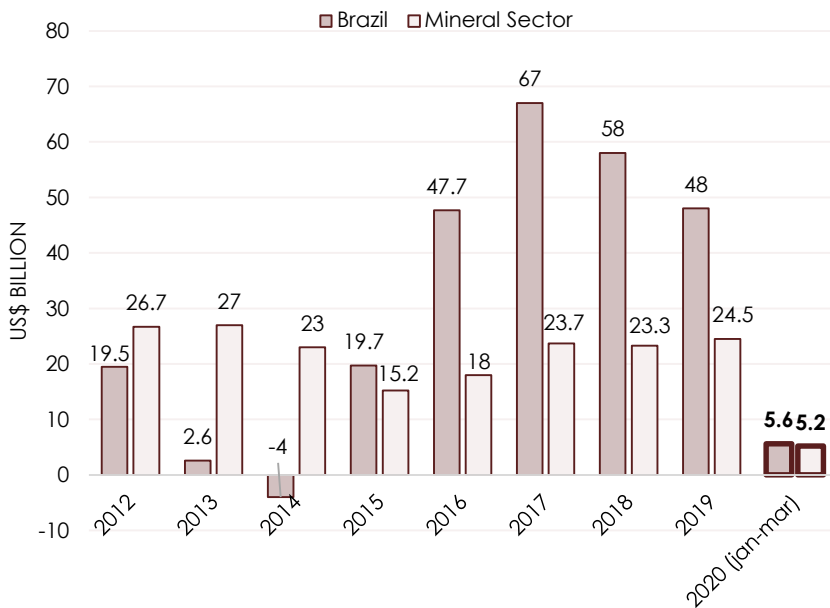
4 Foreign Trade

The Brazilian trade balance recorded an accumulated surplus of US\$ 5.6 billion from January to March 2020, with exports totaling US\$ 49.5 billion and imports, US\$ 43 billion.

In a sectoral analysis, the balance of trade in the mineral sector closed the 1st Quarter of 2020 favorable at US\$ 5.2 billion, adding exports of US\$ 11 billion, reduced by 3.6%, and imports of US\$ 5.8 billion, down 11% compared to the same period in 2019.

From January to March 2020, the total share of the mineral sector's exports taking in account the total Brazilian exports was around 22%, with iron ore exports accounting for about 9.3% of the total Brazilian exports. Imports from the mineral sector were around 13.5% of the country's total imports in the same period.

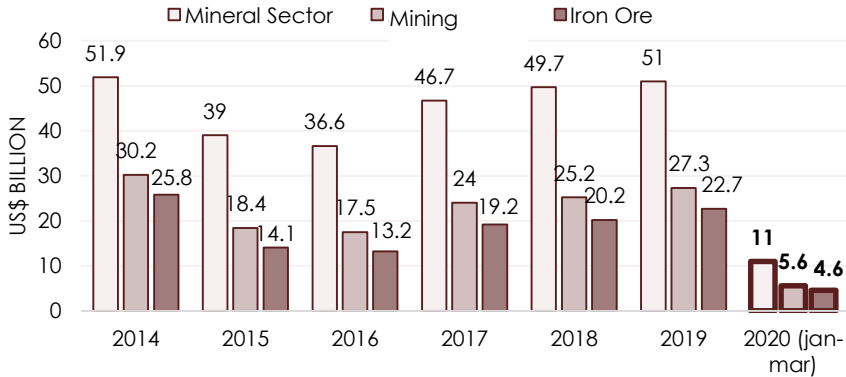
4.1 BRAZILIAN TRADE BALANCE



Source: Economy Ministry (COMEX-STAT/ME, Apr. 2020) consolidated by DTTM/SGM

With respect only to mining, total exports for the 1st quarter of 2020 were US\$ 5.6 billion, which represents a decline of around 3%, due mainly to the reduction (17%) in the volume of iron ore exports that is the main item on this agenda, with a share of 82%.

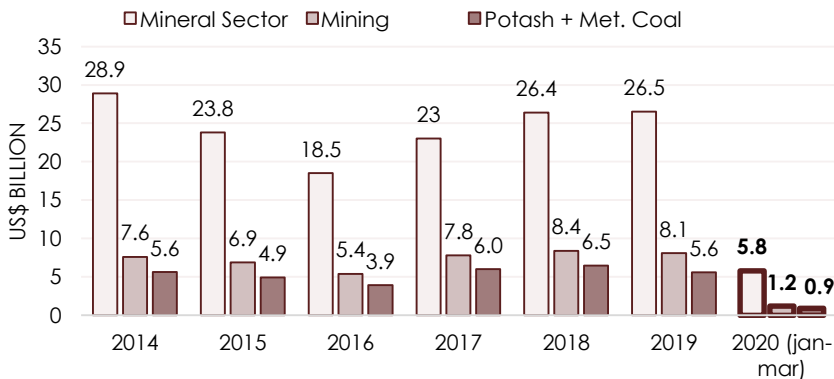
4.2 EXPORT



Source: Economy Ministry (COMEX-STAT/ME, Apr. 2020) consolidated by DTTM/SGM

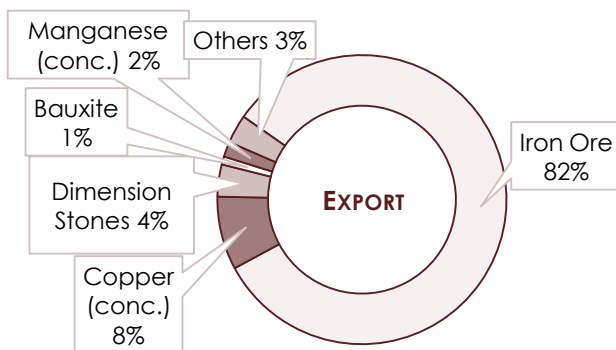
As for mining imports, compared to the same period of the previous year, there was a considerable decrease of approximately 40%, from US\$ 2 billion to US\$ 1.2 billion, justified mainly by the decline in volume purchases of metallurgical coal and potash, the main commodities on this agenda.

4.3 IMPORT

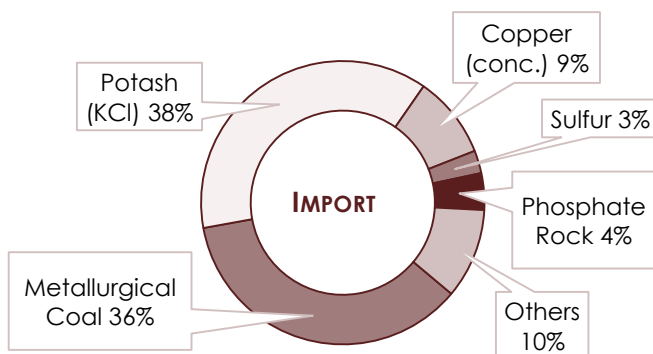


Source: Economy Ministry (COMEX-STAT/ME, Apr. 2020) consolidated by DTTM/SGM

4.4 MAIN COMPONENTS OF THE EXPORT AND IMPORT AGENDA FOR MINING FROM JANUARY TO MARCH 2020



Source: Economy Ministry (COMEX-STAT/ME, Apr. 2020) consolidated by DTTM/SGM



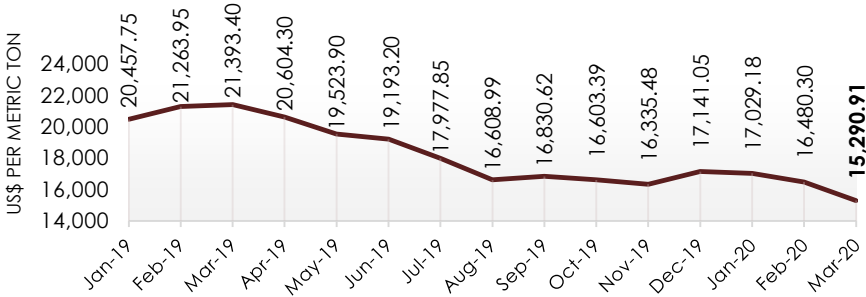
Source: Economy Ministry (COMEX-STAT/ME, Apr. 2020) consolidated by DTTM/SGM

4.5 FERTILIZERS FOREIGN TRADE (JAN-MAR 2020)	Import		Export		Balance	
	10 ³ t	10 ³ US\$	10 ³ t	10 ³ US\$	10 ³ t	10 ³ US\$
Phosphate Rock	678.5	52,090.8	0	0	-678.5	-52,091
Potash (KCl)	1,751	469,482.5	0.6	548.5	-1,750.4	-468,934
Sulfur	494.6	31,912.7	194.8	4,029.2	-299.8	-27,884

Source: Economy Ministry (COMEX-STAT/ME, Apr. 2020) consolidated by DTTM/SGM

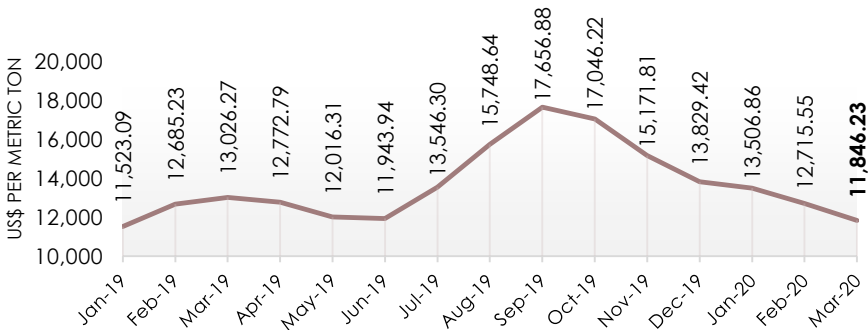
5 Commodities Prices

5.1 TIN PRICE EVOLUTION (US\$)



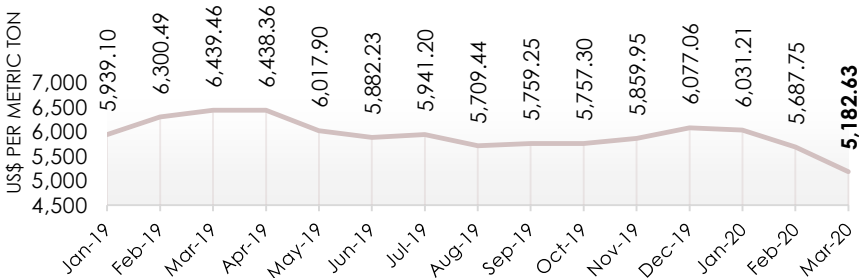
Source: IndexMundi, Platts Metal Week, Thomson Reuters, World Bank (Apr., 2020)
Description: Tin (LME), refined, standard grade.

5.2 NICKEL PRICE EVOLUTION (US\$)



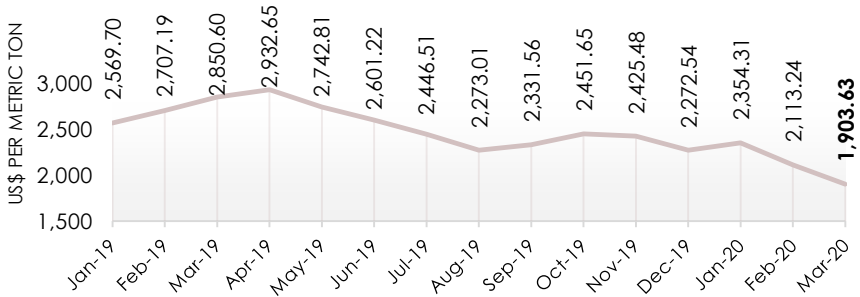
Source: IndexMundi, Platts Metals Week, Thomson Reuters, World Bank (Apr., 2020)
Description: Nickel (LME), cathodes, minimum 99.8% purity.

5.3 COPPER PRICE EVOLUTION (US\$)



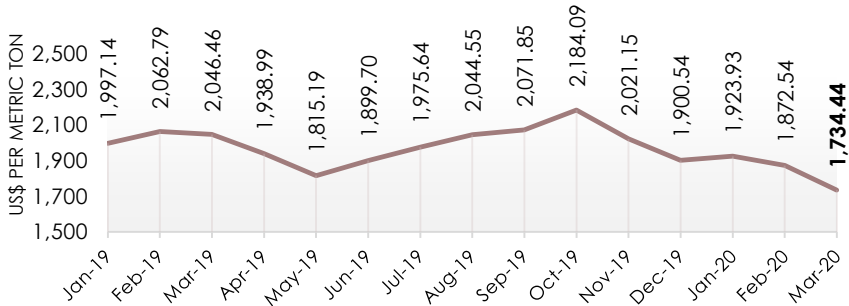
Source: IndexMundi, Platts Metals; Thomson Reuters Datastream; World Bank. (Apr., 2020)
Description: Copper (LME), grade A, cathodes

5.4 ZINC PRICE EVOLUTION (US\$)



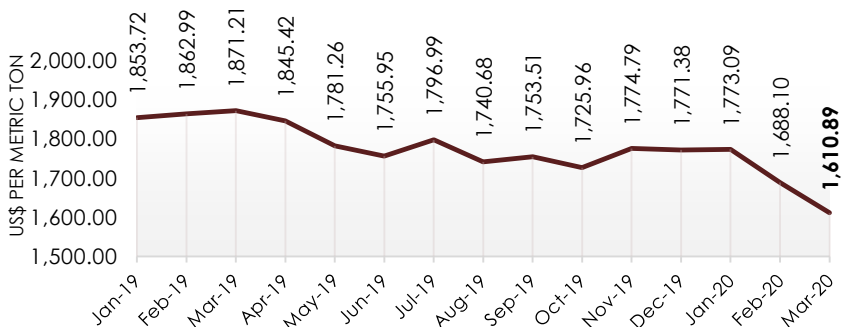
Source: IndexMundi, Platts Metal Week, Thomson Reuters, World Bank (Apr., 2020)
Description: Zinc (LME), high grade

5.5 LEAD PRICE EVOLUTION (US\$)



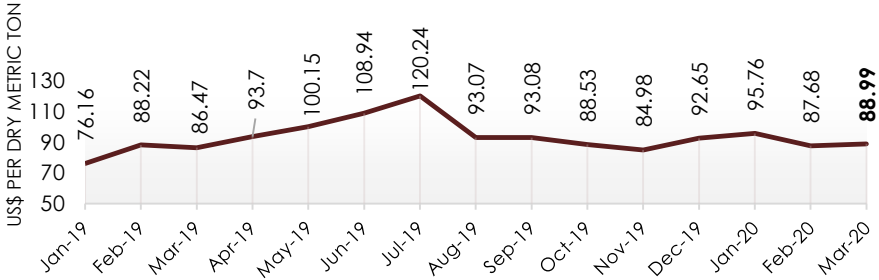
Source: IndexMundi, Platts Metal Week, Thomson Reuters, World Bank (Apr., 2020)
Description: Lead (LME), refined, 99.97% purity.

5.6 ALUMINUM PRICE EVOLUTION (US\$)



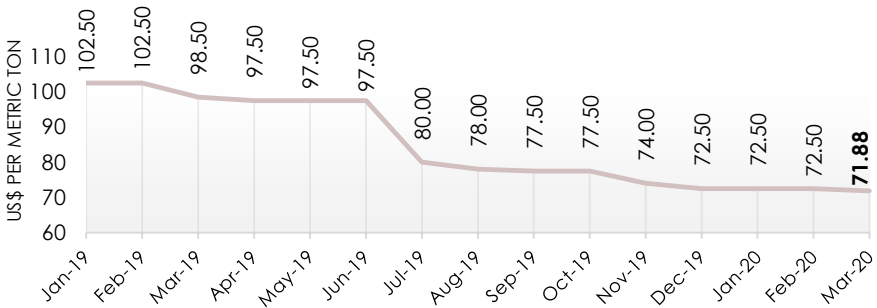
Source: IndexMundi, World Bank (Apr., 2020)
Description: Aluminum (LME), high grade.

5.7 IRON ORE PRICE EVOLUTION (US\$)



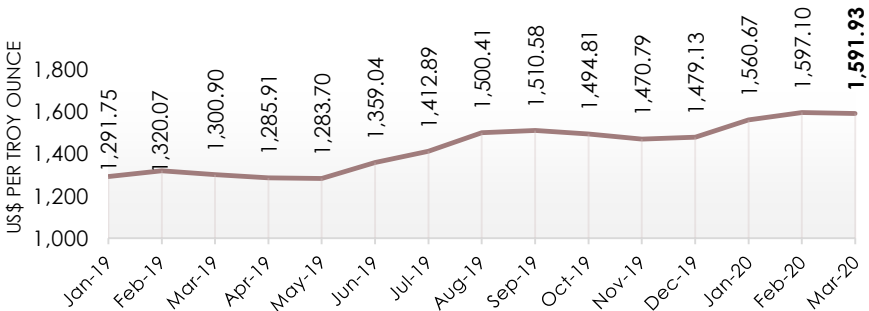
Source: IndexMundi, Thomson Reuters Datastream, World Bank (Apr., 2020)
Description: Iron ore 62% Fe spot, CFR China

5.8 PHOSPHATE ROCK PRICE EVOLUTION (US\$)



Source: IndexMundi, Fertilizer Week, Fertilizer International, World Bank (Apr., 2020)
Description: Phosphate rock (Morocco), 70% BPL.

5.9 GOLD PRICE EVOLUTION (US\$)



Source: IndexMundi, World Bank (Apr., 2020)
Description: Gold (UK), 99,5% fine.

6 Mining Processes

6.1 MOST REQUIRED* SUBSTANCES FOR EXPLORATION FROM JANUARY TO MARCH 2020			6.2 REQUIREMENTS* FILED ³ FROM JANUARY TO MARCH 2020 PER STATE		
1°	Sand	595	1°	MG	354
2°	Gold	492	2°	PA/AP	268
3°	Cassiterite	250	3°	BA	228
4°	Gravel	167	4°	GO/DF	191
5°	Clay	122	5°	MT	185

Source: SIGMINE/ANM (May, 2020)

Source: ANM (Apr., 2020)

Note: *includes requirements for exploration, small-scale mining, extraction registration and licensing.

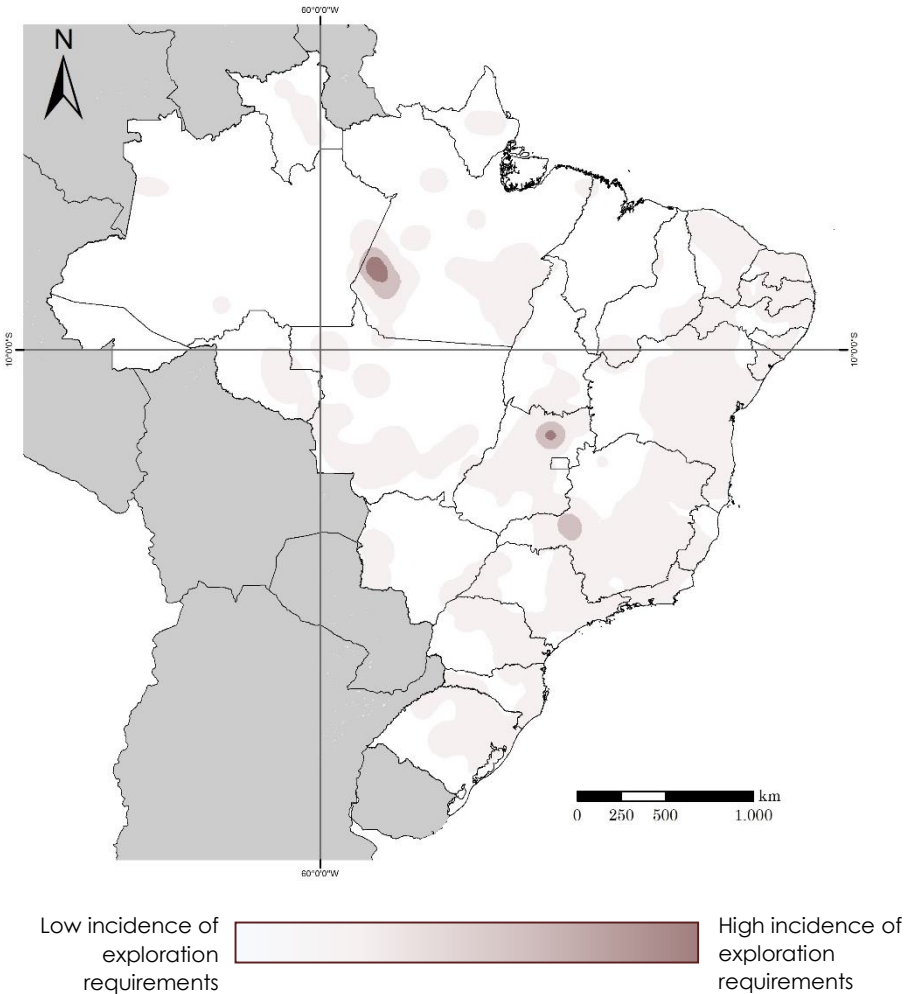
6.3 STATUS OF MINING PROCESSES BY STAGE	QUANTITY
Mining concession	11,284 (5.5%)
Mining application	18,752 (9.2%)
Right to apply for mining	3,148 (1.5%)
Exploration authorization	83,186 (40.7%)
Exploration requirement	26,434 (12.9%)
Small-scale mining consent	2,501 (1.2%)
Small-scale mining requirement	18,217 (8.9%)
Mineral licensing	16,881 (8.3%)
Mineral licensing requirement	9,656 (4.7%)
Extraction registration	2,354 (1.1%)
Extraction registration requirement	1,036 (0.5%)
Availability ⁴	11,164 (5.5%)
TOTAL	204,613 (100%)

Source: SIGMINE/ANM (04/05/2020)

³ Statistics available on the ANM website: www.anm.gov.br/aceso-a-informacao/estatisticas

⁴ Active mining processes in the availability stage, according to the ANM *Cadastro Mineiro* system.

6.4 REQUIREMENTS* FOCUSES FOR MINERAL EXPLORATION FROM JANUARY TO MARCH, 2020



Source: DDSM/SGM, [SIGMINE/ANM](#) (04/05/2020)

Note: * includes requirements for: exploration, small-scale mining, extraction registration and mineral licensing.

DID YOU KNOW?

“

Mining is the basis of many markets for essential items for our population, health and industry in general.

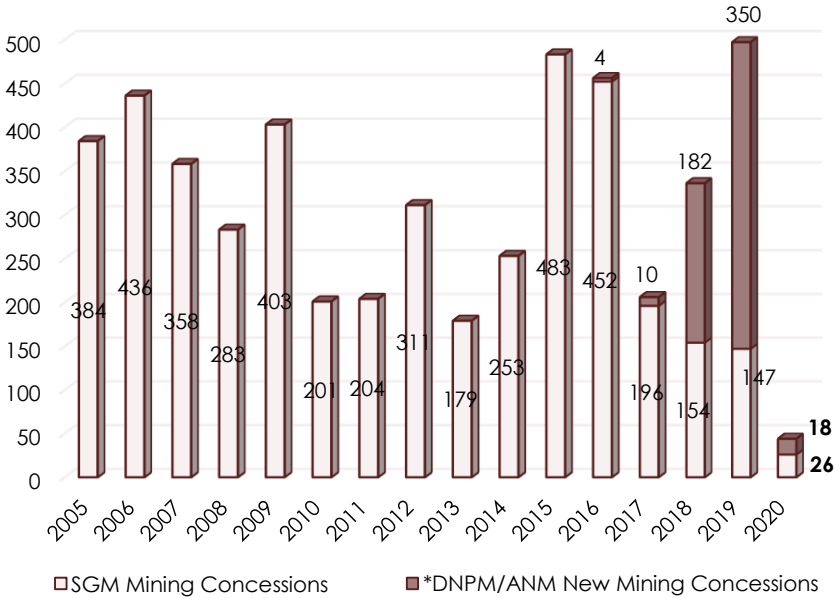
Mining also provides to agriculture, for example, potash, phosphorus, nitrogen, calcium, zinc, among other key nutrients in soil fertility and food production.

Source: *FFALegal* Infographic (2020)

”

7 Mining Concessions

7.1 ANNUAL EVOLUTION OF PUBLISHED MINING CONCESSIONS - ANM AND MME



Source: DGPM/SGM, ANM (Apr., 2020)

Note: *With the advent of Law 13.575/17, the signing of the Mining Concessions for construction minerals (sand, gravel, clay...) became the competence of DNPM/ANM.

DID YOU KNOW?



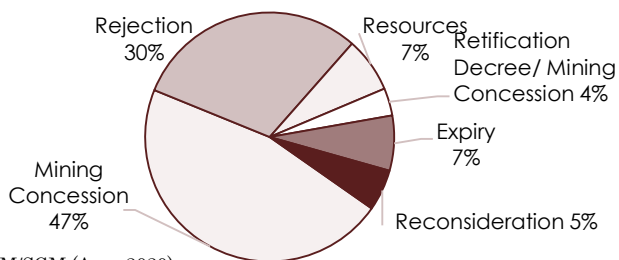
Medicines, reagents and various hospital supplies are made from minerals such as calcium, magnesium, sodium, potassium, phosphorus, zinc. Aluminum salts are adjuvants in vaccines and are directly related to increased immunization response.

Aluminum is also present in the flexible packaging of medicines and sterile utensils, as well as pharmaceutical equipment in general. In our daily life, it is in long-life boxes, cans and disposable packaging, among others.



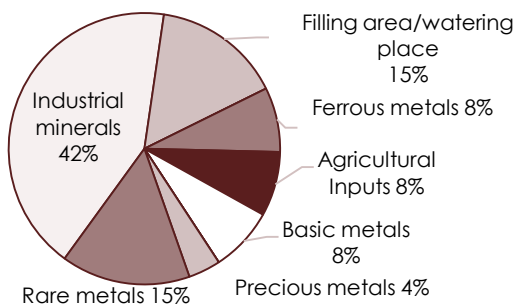
Source: *FFALegal* Infographic (2020)

7.2 TYPES OF PROCEEDINGS WITH MME PUBLISHED FROM JANUARY TO MARCH, 2020



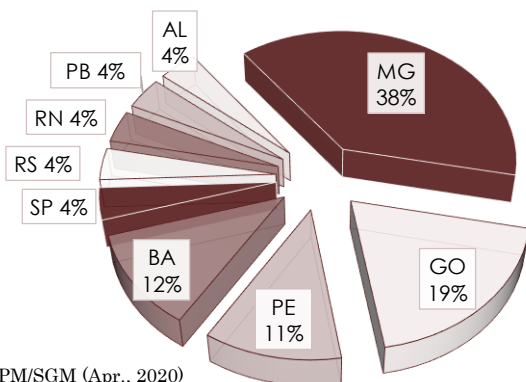
Source: DGPM/SGM (Apr., 2020)

7.3 MME MINING CONCESSIONS PER GROUP USE FROM JANUARY TO MARCH, 2020



Source: DGPM/SGM (Apr., 2020)

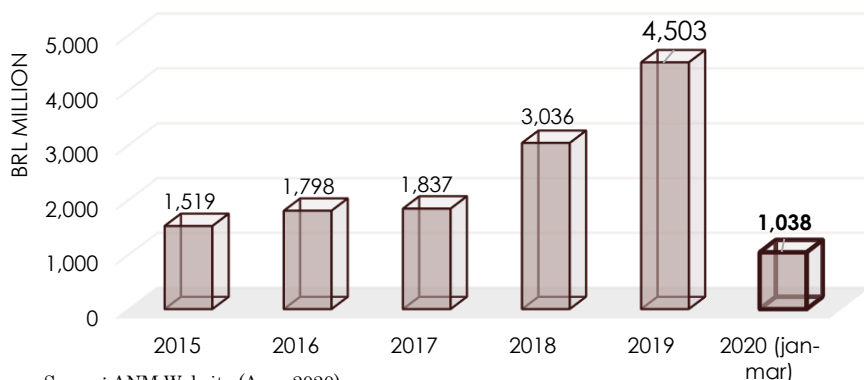
7.4 MME MINING CONCESSIONS PER STATE FROM JANUARY TO MARCH, 2020



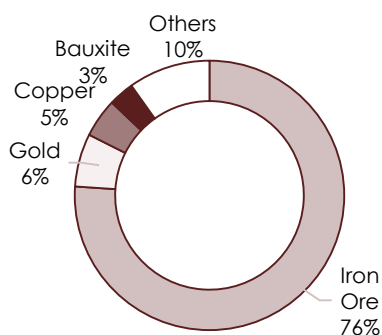
Source: DGPM/SGM (Apr., 2020)

8 | CFEM

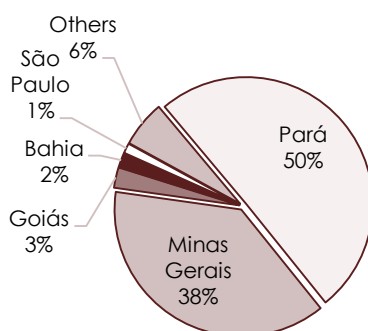
8.1 GENERAL COLLECTION OF ROYALTIES FOR THE EXPLOITATION OF MINERAL RESOURCES (CFEM)



The Royalties for the Exploitation of Mineral Resources⁵ (CFEM) in the first quarter of 2020 were around 17% higher than the same period in 2019. This behavior can be mainly attributed to the positive variation in iron ore prices (9% increase), as well as to the exchange rate reduction. Comparing the 1st Quarter of 2020 to the 4th Quarter of 2019, revenues decreased by around 18%.



8.2 CFEM BY MINERAL SUBSTANCE (ANM, 25/04/2020)



8.3 LARGEST CFEM COLLECTORS (ANM, 25/04/2020)

⁵ CFEM data available on the ANM website: www.anm.gov.br/assuntos/arrecadacao

8.4 MUNICIPALITIES WITH THE HIGHEST CFEM COLLECTS FROM JANUARY TO MARCH, 2020

Ranking	Municipalities	Qty. of Titles	CFEM Collection (BRL)	% of Total
1	Parauapebas/PA	6	262,360,486.99	25.3%
2	Canaã dos Carajás/PA	2	181,832,403.05	17.5%
3	Conceição Mato Dentro/MG	2	67,848,738.14	6.5%
4	Congonhas/MG	5	62,618,116.62	6.0%
5	Itabira/MG	9	41,010,277.35	3.9%
6	Belo Vale/MG	12	34,287,541.33	3.3%
7	Marabá/PA	16	28,661,622.76	2.8%
8	São Gonçalo Rio Ab./MG	9	25,757,124.30	2.5%
9	Mariana/MG	14	22,836,080.29	2.2%
10	Nova Lima/MG	7	17,311,701.77	1.7%

Source: ANM website (Apr., 2020)

8.5 COMPANIES WITH THE HIGHEST CFEM COLLECTS FROM JANUARY TO MARCH, 2020

Ranking	Company	Qty. of Titles	CFEM Collection (BRL)	% of Total
1	Vale	19	541,317,663.97	52.1%
2	CSN Mineração	2	88,627,446.84	8.5%
3	Anglo American Ferro Br	2	68,370,283.73	6.6%
4	Salobo Metais	1	28,517,405.18	2.7%
5	Min. Brasileiras Reunidas	5	16,720,769.73	1.6%
6	Mineração Rio do Norte	1	13,303,866.61	1.3%
7	Baovale Mineração	1	12,101,959.24	1.2%
8	Kinross Brasil Mineração	1	12,007,854.38	1.2%
9	Mineração Maracá	3	11,696,699.57	1.1%
10	Mineração Paragominas	1	10,729,750.48	1.0%

Source: ANM website (Apr., 2020)

The update of CFEM's legislation has changed the distribution of compensation among the federation's entities, allocating 15% of the resources to municipalities that are not producers but are affected by the mining activity developed in its areas (such as shelter ports, railways, pipelines or structures/installations). It has also instituted a benefit destined to producing municipalities that, due to the legal alteration, suffered significant loss of CFEM revenue. In the last 12 months, the National Mining Agency distributed R\$ 401.7 million to 461 municipalities affected by railways, pipelines and ports.

8.6 NUMBER OF MUNICIPALITIES AFFECTED BY REGION FROM MAY 2019 TO APRIL 2020

Region	Number of Municipalities	CFEM Collection (BRL)	(%) of Total
Center-West	19	2,291,679.78	0.6
Northeast	110	174,234,521.01	43.4
North	15	31,424,338.94	7.8
Southeast	260	191,610,878.75	47.7
South	57	2,234,600.01	0.6
TOTAL	461	401,796,018.49	100

Source: ANM (Apr., 2020)

8.7 MUNICIPALITIES BY TYPE OF AFFECT FROM MAY 2019 TO APRIL 2020

Type of Affect	Number of Municipalities	% of total	Total amount received (BRL)	% of total
Lost of revenue	82	17.8%	2,867,711.02	0.7
Railways	365	79.2%	305,743,834.56	76.1
Port operations	30	6.5%	91,860,580.39	22.9
Ore pipelines	14	3.0%	1,323,892.52	0.3
Gran Total	461	100.0%	401,796,018.49	100

Source: ANM (Apr., 2020)

As of May 2020, hundreds of new municipalities distributed throughout the country, that shelter-mining structures, such as piles, dining halls, etc, will be included. For these municipalities, the resources, accumulated almost two years ago, should reach a total amount of about R\$ 318 million.

8.8 MAIN SUBSTANCES FROM AFFECTED MUNICIPALITIES FROM MAY 2019 TO APRIL 2020

Substance	Total (BRL)	% of Total
Iron Ore	374,138,653.21	78.5%
Gold Ore	23,911,964.44	5.0%
Copper Ore	21,078,419.70	4.4%
Aluminum Ore	13,404,009.99	2.8%
Dolomitic Limestone	7,277,740.64	1.5%
Others	37,361,606.71	7.8%
Gran Total	477.172.394,69	100%

Source: ANM (Apr., 2020)

Note: includes the amounts paid to producing states (when there is no hypothesis of affect).

Iron ore is the substance that generates the most revenue for the affected municipalities, responsible for almost 80% of the resources transferred. It is important to emphasize that the producing states may receive residual resources initially allocated to the affected municipalities, if there is no hypothesis of allocation, as regulated by Law no. 8,001/90. Between May/2019 and April/2020, the States received R\$ 75.4 million, which added to the R\$ 401.7 million transferred to the municipalities, totaling R\$ 477.1 million distributed by ANM in the last 12 months.

DID YOU KNOW?



Emergency works and capacity increase in hospital units have several ores in the materials used in the structures, such as iron, steel and aluminum. Besides these, there are minerals in the walls (limestone, sand, clay and gravel), floors (tile, kaolin, slate, marble, and granite) and roofs (gypsum, clay, limestone).

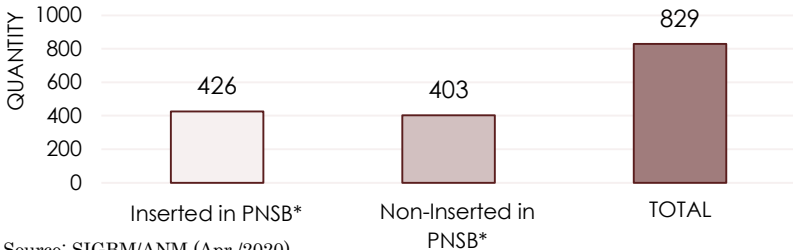
Hospital equipment has electrical and electronic components that carry minerals such as copper, zinc, silver, gold, tin, tantalum, silicon, graphite in their compositions. In the respirators we also have PVC and hardware, which use petroleum, iron, aluminum, nickel.

Source: *FFALegal* Infographic (2020)



9 Dams

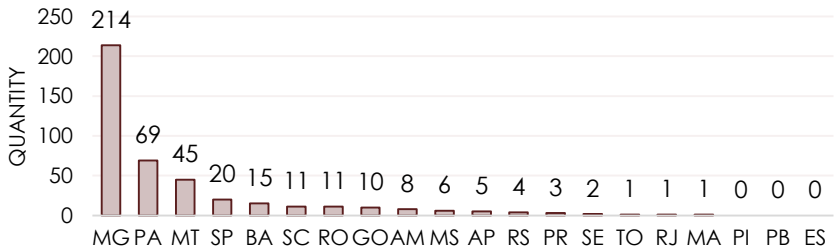
9.1 NATIONAL REGISTRATION OF MINING DAMS IN BRAZIL



Source: SIGBM/ANM (Apr./2020)

Note: * National Dam Safety Policy, established by Law n° 12.334/2010

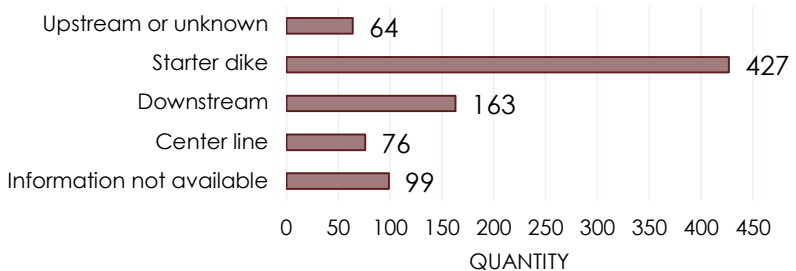
9.2 MINING DAMS INSERTED IN PNSB* PER STATE



Source: SIGBM/ANM (Apr./2020)

Note: * National Dam Safety Policy, established by Law n° 12.334/2010

9.3 CONSTRUCTION METHOD OF MINING DAMS



Source: SIGBM/ANM (Apr.,2020)

Note 1: The Construction method graph considers all mining dams (829)

Note 2: ANM Mining Dam Safety Management System (SIGBM) is available on the website:

www.anm.gov.br/assuntos/barragens/sigbm

10 | Opinion

ARTICLE: MINING, ESSENTIAL BY ESSENCE

BY ALEXANDRE VIDIGAL DE OLIVEIRA

(NATIONAL SECRETARY FOR MINING OF THE MINISTRY OF MINES AND ENERGY)

Brazil has recently joined the select group of countries that own advanced scientific technology, by placing the Sirius particle accelerator in its initial phase of operation, thereby taking on the world leadership in the production of synchrotron light, capable of analyzing molecular and atomic structure in high resolution.

In Japan, about five years ago, the most powerful electronic transmission microscope in the world came into operation. There, scientists also claimed to have fired a laser beam that generated a volume of concentrated energy corresponding to almost a thousand times of all the electricity produced on the planet.

Supercomputers with quantum processors begin to be tested and the results seem to point out that they have the capacity to perform in 200 seconds operations that a current supercomputer would only achieve in ten thousand years.

Experiments with magnetic levitation trains (Maglevs) have reached speeds over 600 km/h.

Being able to see a hidden object has already become a reality with the resources of RF-Pose, of the Walabot-DY, and a device to capture the three-dimensional geometry of the non-visible scene with 50 trillionths of seconds photon detection is being developed. Volumetric video, with great visual reality sensation, immersive media, as well as three-dimensional pixel, is already being produced.

These are just some examples of the experiments and results of science and technology in our times. In ancient times, humanity has also known inventions that - although quite common and even rudimentary today - were then responsible for promoting the leap in knowledge that allowed humanity to reach our current stage of development. The compass is one example of such inventions: it determined a new paradigm for society by allowing men to travel long distances. Other inventions, such as clocks, radio, lamps, glass, cables, TV, cell phones, GPS,

satellites, medicines, musical instruments, have become part of people's daily lives as something commonplace, and people do not realize the technologies and inputs necessary for the production of such goods.

All these experiments and products, from past and present technology, have in common the fact that they only exist because some mineral was used or transformed in the process of their creation. Moreover, the machines, tools or equipment applied in this process were also produced, in their turn, with mineral goods.

The relationship between human beings and minerals is deep and inseparable. There would be no contemporary society, with its habits, facilities, and technological resources, without mining - which is, in fact, the industry of all industries.

From mineral goods derive the new sources of production and storage of energy, the "clean energy", which is the alternative for a more sustainable and less polluted world. Without mining there would be no fertilizer for agricultural production at the levels that humanity needs today. Without mining there would be no cities with infrastructure, water and sewage treatment. There would be no modern means of communication and remote social interaction. The world's population would be much smaller and more suffering because it would not have the medical-hospital resources, medicines, laboratories, and research that help to ease pain and save lives.

From mineral water to radioactive minerals, there is a diversity of mineral goods that society cannot do without. In Brazil, about 80 of such minerals are extracted in order to meet the country's and the world's needs. One electronic equipment, for instance, demands the use of more than 30 minerals to be produced.

For contemporary living standards, mining is essential, indispensable, and unavoidable. It is essential not because of one individual will, but because it really is essential, by its own relevance as an input for almost every good that is produced in the world. Denying this fact would mean living in a world of fiction, a contradictory world in that it would have to cease to enjoy the well-being that current life provides, thanks to mineral goods. Without mining, there would be the end of not only products and goods, but of life itself and of our way of living!

11 | SGM Highlights

11.1 PDAC 2020

On February/March 2020, the SGM, accompanied by other officials from the Secretariat, went in an official mission to Ottawa to meet and share experiences with representatives of the mineral sector and of the Government of Canada. SGM went also to Toronto to participate in the 88th Convention of Prospectors and Developers Association of Canada (PDAC). Throughout the PDAC, the Secretariat members have participated in a series of meetings, including with government institutions from Australia, Canada and the United States, in addition to the intersessional meeting of the Annual Conference of Ministries of Mining of the Americas (CAMMA). The Brazilian Delegation also held meetings with mining companies, current and potential investors, research centers, as well as with technology institutions, and the Toronto Chamber of Commerce.

11.2 MEASURES TAKEN IN ACCOUNT BY THE MINISTRY OF MINES AND ENERGY RESULTING FROM COVID-19

In the mineral sector, the MME has adopted a series of measures aiming at helping the population, industry and services during the COVID pandemic. The Covid-19 Sectoral Monitoring Committee, coordinated by SGM, was created in order to articulate the demands of the sector regarding activities of the mineral production chain. Through the Regulation No. 135/GM, the availability of mineral inputs was considered essential for the production chain of activities contained in Decree No. 10,282/2020. The ANM, in its turn, has published ANM Resolution no. 28/2020 (amended by Resolution no. 29), which established the suspension of some procedural and material deadlines. Several virtual groups were formed and meetings were held together with the MME, the mineral sector class associations and the ANM, in order to evaluate the necessary actions to face the crisis and the mining companies' proposals for post-crisis recovery.

11.3 QUALIFIED MINING PROJECTS AT PPI

Mining Ventures are part of the portfolio of the Investment Partnership Program (PPI). CPRM plans to make available to the market through auctions mining assets of its property. The first block of areas was the Palmeirópolis Complex (Tocantins State), whose auction took place in 2019. The other CPRM projects that are already in conditions to be offered are: Miriri Phosphate (Pernambuco State); Bom Jardim Copper (Goiás State); Candiota Coal (Rio Grande do Sul State), and Caulim do Rio Capim (Pará State). The ANM, in its turn, has approved the qualification of areas in availability. A Pilot Block composed of approximately 500 areas which are selected according to the associated mineral good will also be subject to public offer. The Agency published, in February 2020, ANM Resolution 24, which regulates the availability procedure. The bidding notice for the areas is being prepared by ANM.

11.4 CTBMIN 2ND MEETING

The 2nd meeting of the Technical Committee for the Safety of Mining Dams - CTBMin took place in April 2020. The fulfillment of legal actions related to the safety of ore tailing dams was one of the issues highlighted, among others, such as: Mining Dams Survey Campaigns under ANM, in 2019 and 2020; evolution of safety indicators of mining tailings dams expressed by the criteria of Category of Risk (CRI) and Associated Potential Damage (DPA); and presentation and discussion of actions to be conducted jointly by Federal Public Administration agencies. The next meeting is scheduled to take place in July this year.

11.5 PORTFOLIO OF PROJECTS IN THE MINERAL SECTOR

SGM has selected, for monitoring, a portfolio of projects with the main mining enterprises with a view to identifying obstacles to the implementation of strategic projects that can be solved or mitigated by MME specific actions in articulation with other ministries and institutions. It also aims at identifying common threats and opportunities for the development of new projects, helping in the

formulation of policies for the sector. Up to the present time, 82 projects have been listed, with planned investments of US\$ 35.2 billion, between 2020 and 2024 (estimated by the SGM), based on statements by companies and contributions from entities representing the sector. The forecasts will have to be revised bearing in mind the impact of the COVID 19 pandemics.

11.6 PARTICIPATION IN THE AMAZON NATIONAL COUNCIL (CNA)

The Amazon National Council (CAN, initials in Portuguese), established by Decree no. 10,239/2020, is the body responsible for coordinating and monitoring the implementation of public policies regarding the Amazon. CNA is responsible, mainly, for proposing policies and initiatives related to the preservation, protection and sustainable development of the Legal Amazon, in order to contribute to the strengthening of State policies and ensure the transversal and coordinated action of the Union, states, municipalities, civil society and the private sector. This council counts with the participation of several federal bodies and is chaired by the Vice-President of the Republic. The MME participates in several commissions, and the SGM has representation in the Sustainable Development Commission.

11.7 CFEM AND AFFECTED MUNICIPALITIES

The so-called “affected municipalities” are those that do not produce, but are in some way impacted by mining, whether it is harboring ports, railways, pipelines or processing plants, for instance. ANM has published the definitive list of municipalities affected by the mineral activity that are able to receive CFEM. Municipalities that shelter mining structures - such as dams, tailings piles, canteens, etc. – will be included. For the latter, the resources, accumulated almost two years ago, amount plus than R\$ 300 million.

OUR TEAM

Minister of Mines and Energy

Bento Costa Lima Leite de Albuquerque Junior

National Secretary of Geology, Mining and Mineral Transformation

Alexandre Vidigal de Oliveira

Deputy National Secretary

Líliá Mascarenhas Sant'Agostino

Managing Directors

Ricardo Monteiro (Dept. Policy Management on Geol., Mining & Transf.– DPGM)

Frederico Oliveira (Dept. Geology and Mineral Production - DGPM)

Enir Mendes (Dept. Transformation and Mineral Technology - DTTM)

Gabriel Maldonado (Dept. Sustainable Development in Mining - DDSM)

Technical Staff

Hélio França (DPGM)

Patrícia Pego (DPGM)

Ranielle Araujo (DDSM)

José Luiz Ubaldino (DGPM)

Daniel Lima (DTTM)

Sandra Angelo (DTTM)

Technical Assistance

Blenda Carvalho (intern at DDSM)

Art and Design

Ranielle Araujo (DDSM)

English Version

Samir Nahass (SGM)

Maria Rita Silva Fontes Faria (SGM)

Institutional Cooperation

Geological Survey of Brazil (CPRM)

National Mining Agency (ANM)



Ministry of Mines and Energy - MME
Secretariat of Geology, Mining and Mineral Transformation - SGM
Esplanade of the Ministries Block U – 4th floor
70065-900 - Brasilia – DF, Brazil
Phone: +55 61 2032-5175 Fax: +55 61 2032-5949
gab.sgm@mme.gov.br
